The Effect of Values and Cultural Models on Policy:

An Anthropological Approach to Environmental Policy in Tampa Bay

Prepared for
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"Understanding Public Values and Attitudes Related to Ecological Risk Management"

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Executive Summary

Policymakers and administrators in the Tampa Bay region have observed high levels of public support for policies to reduce human impact on the Bay. This support has helped to make possible government actions that restrict water-borne pollution, nutrient loadings, and other anthropogenic impacts on the Bay. Current studies of the Bay's water and ecosystems suggest that further improvements will require action to reduce the impact of the deposition of airborne materials into the bay, which will require different types of policies, affecting different sources. Whether and how public support will extend into these new policy areas is not yet known.

The proposed research takes the approach, demonstrated in Kempton, Boster, and Hartley (1996), Bunting-Howarth (2001), and Kempton, Rayner, Harris, and Marker (2001) that support or opposition to policies can be understood by eliciting the public's values and cultural models. The goal of this research is to understand the values and cultural models that Tampa Bay residents apply to the Bay and to policies to preserve the Bay. Specifically, we will conduct interviews to elicit the values that lead residents to place priority on protection of the Bay relative to other social or personal priorities. The interviews will also elicit cultural models that people use to explain why various types of human impact cause damage, how different elements of the Bay ecosystem interact, and how protection measures can affect the preceding. Finally, the interviews will explore what is now known about air deposition into the Bay and its impacts.

Specific Aims

This proposal seeks to better understand the nature of public support for environmental protection, and to incorporate public values and cultural models into environmental decision-making by agencies. This proposal will further develop research methods that specifically identify values and attitudes toward protection of natural resources at risk. With these findings and methods, the Environmental Protection Agency (EPA), along with other Federal agencies, will be able to comprehensively understand public support and identify potential roles for public input in developing environmental policy.

We propose to demonstrate the utility of our methods in pinpointing the values, beliefs, and attitudes used in defining public support or opposition for environmental protection measures. These general goals will be researched through the proposed project for specific environmental problems in a specific location, the Tampa Bay. Since its inception in 1991, the Tampa Bay National Estuary Program (TBNEP) has strived to protect the resources of Tampa Bay. In developing the Comprehensive Conservation and Management Plan (CCMP), the TBNEP stressed the need to incorporate public input into all facets of the program. The CCMP, however, failed to address public misinterpretation of specific issues, such as atmospheric deposition of nitrogen, and the public values, beliefs, and attitudes fundamental to their support of environmental policy.

With an understanding of citizen values and cultural models in this place, Federal, state, and local environmental legislation and policy will be better equipped to address the concerns of citizens and user groups, facilitating broad-based support for future initiatives. The major question addressed in our study

will be, “What are the values, beliefs, and attitudes used by the general public to support environmental protection of the Tampa Bay?”

Background and Significance

South Florida has experienced a steady increase in population since the beginning of the 20th century. Following the flow of people came development and urbanization with land use, flows of materials, runoff, air pollution, and other impacts altering natural systems. Communities had sprung up where wetlands once thrived and soon these natural landscapes were being altered to accommodate the influx of new residents (Rapport *et al.*, 1998). New estimates project the population of the Tampa Bay region to increase up to 17% by the year 2010 with 2.34 million people living within the vicinity of the Bay (TBNEP, 1996: p. 3). This will further strain the region’s remaining natural resources.

However, since the 1970’s there has been an increasing concern about the human impact upon the environment (Dunlap, 1991). In 1990, a poll indicated that 71% of the Florida population desired an increase in funding for environmental protection, ranking it 3rd in priority issues (SAFE, *2001*).

One of the first efforts to include public participation in environmental policy implementation in Florida took place in the Kissimmee River Basin. By the mid 1970’s environmental degradation was evident. Legislation was enacted and programs put in place in the 1980’s. Public debates and special symposia were held to inform and involve participants in the process of evaluating and improving existing regulatory protection measures. Rapport *et al.* (1998) relate, "The evolution of societal values and their integration with biophysical, political,

institutional, and socio-economic realities is stimulating citizens and Government agencies to re-evaluate a century of activities in the South Florida landscape." This was a local example in which, according to Rapport *et al.*, societal values emerged significantly enough where they had an impact on environmental policy, and facilitated policy implementation (1998).

Concurrently, environmental concern began to be seen in the Tampa Bay area through actions such as the initiation of the Tampa Bay National Estuary Program (TBNEP) and the development of the Comprehensive Conservation and Management Plan (CCMP). Throughout the CCMP for Tampa Bay, managers call for active participation of the public in all aspects of the management of Tampa Bay. They say that success of the plan relies on "sustaining broad-based citizen support for bay restoration and protection" (TBNEP, 1996: p. 54). Several programs were enacted to reach out to the public ranging from public newsletters and an active community advisory committee, to public focus groups (p. 250). However well-intended these activities were constructed to be, they failed to address crucial public values underlying environmental concern. For instance, it was acknowledged that the public was incorrectly identifying sources of bay pollution, yet little was done to address these misconceptions (p. 245-246).

Throughout environmental policy literature, evidence of public values regarding specific environmental policies, let alone atmospheric deposition of nitrogen, is scarce. Many authors comment on the importance of this type of information, yet few studies have been performed. Fiorino relates, "institutions for drawing the lay public's views into policy deliberations are rarely studied and only occasionally tested" (1990). Schultz and Zelezny believe that understanding

the "values and motives that underlie environmental concern and behavior is needed before we can move toward more effective environmental policies" (1999). Canter, Nelson, and Everett (1994) agree, stating, "what is lacking is a body of literature that specifically focuses upon factors influencing risk perception for the water environment" (referring to water quality concerns).

One of these factors is public environmental values. Little is known or understood on what the public considers important and why they feel this way. The lack of sufficient understanding of these values and the utility of such information necessitates their examination. Indeed, this information is becoming increasingly more important to many institutions.

A few Federal agencies have developed goals that concentrate on identifying and understanding target audiences, including the general public, affected by agency regulations. For example, the EPA stresses the need to identify environmental attitudes, beliefs, and values of the agency's targeted audience (EPA, 1997). The NEP emphasizes that decision makers must know who is affected and how they are affected as well as how the public values change in the quality of environmental resources (NEP, 2000). The Environmental Law Institute agrees, urging the National Oceanic and Atmospheric Administration (NOAA) to include these practices in future policy decisions (ELI, 2000). However, these goals have, so far, resulted in few studies, and fewer examples of policy made on their basis.

Identifying target users or publics and their respective values and perceptions is just the beginning of the process of incorporating these values into public policy. Decision makers must not only identify these concerns, but they

must apply them in their decision process. However, this does not always happen in practical decisions. Lofstedt suggests that many problems may be culturally structured and cannot be fixed by technological advances and must therefore be addressed by understanding underlying public perception (1995).

Kellert and Clark state that the "need to understand values associated with natural resources is often overlooked during the process of policy development" (1991, cited in Casagrande, 1996). These values should be incorporated into the early development of any policy program and are a vital foundation on which to build upon (EPA/SAB, 2000). By ignoring the needs of sub-populations, interest groups, and other portions of the general public, the benefits of policy implementation are not always felt by those that bear the cost (NEP, 2000). Understanding the needs of all stakeholders involved is key to "highlight[ing] the consequences that require most careful attention and the tradeoffs that matter most" (Gregory, 2000; Harwell, 1999). Incorporating the process of understanding public values, beliefs, and attitudes into the other practices Federal agencies use in developing public policy will allow for more relevant and appropriate policies applicable to the target audience.

Research Design and Methods

The TBNEP has conducted both a survey and a number of focus groups to gather information on public attitudes. In 1992, a survey was conducted addressing the general public and registered boaters who regularly use the bay. This survey aimed to identify and assess public perceptions and attitudes regarding the Tampa Bay ecosystem and the measures intended to protect it

(Kastancuk and Burton, 1992). This study indicated that in most cases, the opinions of boaters did not significantly differ from that of the general public. The differences that were observed, however, indicate that the cultural models used by the boating group were more accurate and in line with current scientific understanding than were responses from the general public. Following up on this study, focus groups were conducted in 1996.

The proposed work would go beyond the attitudes studied in this prior research and seek the underlying values and cultural models. We believe the best way to understand the values and attitudes associated with the protection of Tampa Bay against nitrogen deposition lies with semi-structured interviews. Using this method, an interview guide is constructed. This guide consists of a list of questions or topics that are to be covered in a particular order. The answers to the preceding questions lead into the latter questions. Answers thus build upon one another and develop a complete picture of what we are trying to study.

The semi-structured interviews should be conducted to study sectors of the public involved with the Tampa Bay ecosystem: the general public, non-governmental organizations (NGO's), and bay users, such as recreational boaters. Based on reviewer comments, we considered other bay users, such as commercial or recreational fishers. However, managers familiar with the local economy reported that most fishing takes place in the Gulf of Mexico, not in Tampa Bay (H. Greening, personal communication). No other coherent user group susceptible to sampling is known. However, the interview includes a question about "other uses of the Tampa Bay", and other user groups will be considered if this data reveals them.

Studying the general public gives us a sense of how voters will react to public information and policy decisions. NGO's represent specific environmental interests within the region. They are well educated regarding environmental issues, are very active in policy planning and decision-making, and often reach out to the general public to inform and build support for specific initiatives. Finally, the boating community is a specific user group highly affected by environmental policy decisions regarding Tampa Bay, who may themselves balance regulations restricting their recreational activities against the value of protecting the Bay. Although recreational users and environmental NGO's are not typical members of the public, they represent some of the public constituencies and they may also be valuable in more clearly articulating values and cultural models shared by the broader public. In a qualitative-based study, we propose eight interviews be conducted with the NGOs, eight with the boaters, and twenty with the general public.

These groups can be sampled as follows. To sample the general public, random sampling would be employed based on selection of addresses, possibly combined with convenience samples from public places. NGO's are based throughout the Tampa Bay area and can be contacted through their representative offices, ideally sampling a diversity of NGOs based on the advice of locally-knowledgeable individuals. The boating community can be sampled where they access the bay: at public boating ramps. In case boaters at ramps are too rushed for the interview, we would try other approaches such as approaching them while waiting in line to either launch or retrieve their boats, interviewing boaters at

local refueling or gas docks, and actually going out on the water and interviewing anchored boaters who might have the time to devote to assisting us in our study.

Tape-recorded interviews and notes would be analyzed for content to determine values and cultural models, as well as any additional attitudes or beliefs. The common values are then used to discuss what is important to the various groups studied regarding environmental protection of Tampa Bay. These methods are described in more detail in Kempton, Boster, and Hartley (1995).

In the preparation of this proposal, a pilot study was performed to determine if the methods described above could elicit commonly shared cultural models and also the values underlying attitudes and policy preferences. Several informants representing the general public were sampled at a mall in Tampa, and a representative from a local NGO was interviewed over the phone. No representatives from recreational boating interests were sampled. The pilot survey instrument used follows:

Interview Questions for EPA/SAB Workshop: Pilot Survey

RECORD ON PAPER:

Date
Time
Informant #

Introduction: Hi, I'm Doug Christel, a graduate student in Marine Policy at the University of Delaware. We are doing interviews to try to understand public values associated with the Tampa Bay. Could I ask for your opinion? Your identity will be kept entirely confidential [In fact, I'm not even writing down your name]. Since the questions require verbal answers, we will use a tape recorder. Is that all right? This interview will take about twenty minutes.

1. How long have you lived in the Tampa Bay area?

2. What have you heard about threats to the Tampa Bay, or changes in the Bay? [Prompt] [List]

3. What do you think is causing _____? (Fill in with threats and changes given above) [Prompt if needed] Why do you think that is happening? [Get cultural models, what causes what, etc.]

4. Are you concerned about _____? (Again, fill in with threats from 2) Why? [Prompt if needed to get basic values]

5. Have you heard about the steps being taken to protect the Tampa Bay? If yes: What have you heard about? [List]

6. Do you think those steps/measures would help the Bay? Why or why not? [Prompt as necessary to cover each step, program, or measure, and why they think it would work. This should get more on cultural models.]

7. Do you agree with these measures? Why or why not? [Prompt]

8. What other things should be done to protect the Bay?

Only if not covered above:

9. How do seagrasses play a role in Tampa Bay? What about nutrients?

10. Have you heard about any effects of substances in the air getting into the water in the Tampa Bay? What have you heard? Would you expect this to be a major problem for the Bay, a minor problem, or not a problem at all? Why?

11. Where did you get your information about all of the topics discussed previously?

12. What sources do you feel are the most trustworthy and reliable regarding those topics?

13. Do you, yourself, participate in any recreational activities on the Tampa Bay, or use it for any other forms of enjoyment?

14. Is your own employment dependent on the Tampa Bay? [Get occupation, if so.]

That's all of our questions. Do you have any additional comments?

END

The results of these pilot interviews demonstrate the range of understanding of environmental issues within the Tampa Bay community. For

anonymity, we will refer to participants in the study as informants #1, #2, and #3.

Informant #3 has lived in the Tampa Bay area since 1971. However, in her thirty years of residence, she says she has *not* witnessed *any* changes in the Bay's condition, water quality, or abundance of plant and wildlife. She said she has never really paid any attention to the Bay. What she has observed, however, is the planting of seagrasses all over the Bay. She thinks this is a good practice, but fails to indicate why. She states vehemently, "I want the Bay clean…that's all!" However, she is fervently opposed to any increase in vehicle emission regulations and does not wish to help pay for a cleaner environment. This informant illustrates a case of a person who may have environmental values, but who is not very knowledgeable and is not willing to make personal sacrifices in order to pay for environmental protection. (Further interviewing would be required to understand the reasons for this and whether it could be addressed, say, by better communications or by alternative policies.)

On the other end of the spectrum, Informant #2 knew more information regarding present environmental conditions in the Bay than was expected from members of the general public. This gentleman has lived in the area for 30 years and is significantly more aware of the present conditions of the Bay than Informant #3. He regularly takes walks along the Bay and enjoys simply being in the outdoors. Unlike Informant #3, however, he *has* observed many changes in the Bay. He states that seagrasses have come back, fish have returned, oysters are starting to settle once again, water quality is dramatically improving, and development seems to be slowing along the waterfront. He is very contented with

the degree of protection now enacted throughout the Bay and wishes it to continue. He believes that there is a dormant environmental sensitivity within the general public. He states that this sensitivity is mainly expressed when conditions have deteriorated beyond repair. Only after this has happened will environmental values and attitudes take over and become a driving force in environmental protection helping initiate protective measures.

As expected, our interview with a local NGO representative, Informant #1, produced an enormous amount of information regarding local environmental conditions. Many environmental threats were brought up along with a long list of changes in the Bay over the last 21 years he has resided in the area. These issues include: water quality, overfishing, nutrient loading, air quality issues (specifically NO_x, Sulfur, and O_2 emissions), and land development. He noted that many issues have been successfully addressed and are now improving greatly. Of the changes in the Bay witnessed by this informant, social changes seemed to stand out most. He has witnessed the development and establishment of a "broad, diverse environmental community." Citizens, scientists, and industry alike have worked together to help improve the conditions of the Bay. He states that efforts were neither political nor partisan: everyone participated, analyzing issues in a "holistic manner." He states, "It's a Bay problem" which doesn't stop at jurisdictional boundaries.

From the standpoint of Informant #1, we should protect the Tampa Bay for reasons Kempton, Boster, and Hartley describe as "biocentric," indicating the inherent rights/value of nature (1995: 87). Human activity and development of the watershed has gone on for too long and has limited the ability of the region to

access fresh water; a concern Informant #2 addressed as well. Informant #1 also states that the local community perceives that development poses a threat to wildlife and water availability. Informant #1 believes that there is very strong public support for environmental protection (to protect local wildlife and habitats), but he believes the public fails to know what it takes to protect these resources.

These three informants have illustrated the range of possible responses that could be gathered using the methods described above. Informant #3 had not witnessed any changes (positive or negative) in the Bay's condition since she's lived in the area. She stated that a clean bay is important to her, but did not offer any reasoning behind this statement. She wants more environmental protection, but at no extra cost to herself. Informant #2, on the other hand, reports observing many changes in the condition of the Bay -- the reemergence of fish, shellfish, and seagrasses to the area. He understands that habitats such as seagrasses support other organisms (shellfish) and values the Bay for what it can provide to organisms as well as to humans. He states, "I run along the Bay; it's important to me," suggesting "biocentric" and "anthropocentric" values respectively (Kempton, Boster, and Hartley, 1995: 87, 89). He states that developers are more concerned with property rights and development rather than ecological preservation, an example of a cultural model used to explain why others oppose environmental protection (Kempton, Boster, and Hartley, 1995: 54-55).

The effectiveness of these interview methods to bring out environmental values has been demonstrated in this simple pilot study. Elicited values include the intrinsic right/value of nature, the aesthetic value of nature, and utilitarian

values. However, we did not get enough information to be sure of what cultural models were held and how they were used to understand environmental threats and policy effectiveness. A more comprehensive study performed with more informants from all user groups will provide a more complete inventory of values, and would allows us to also identify cultural models citizens use to understand these issues.

Advantages over other methodologies

The semi-structured method of interviewing allows the researcher to direct the flow of information to specifically address particular concerns without limiting the response of the informant or excluding unanticipated but relevant information. A general survey instrument is constructed which allows for flexibility and adaptability in data gathering. Although allowing for considerable flexibility in eliciting responses, the researcher is still in control of progress of the interview and can redirect answers to reflect desired intentions of the research (Bernard, 1995: 210).

Researchers are able to build on the answers given by the informant to delve deeper into the reasoning behind such answers. Researchers can follow new leads and gather unexpected, but pertinent information. Therefore, a more comprehensive understanding of the underlying factors and motivations for beliefs and actions can therefore be elicited.

Semi-structured interviews conducted face-to-face offer other advantages as well. Researchers are able to clarify answers on the spot and get more detailed information than a mailed survey (Bernard, 1995: 258). The questions can be more direct, more specific, or more general depending on the knowledge of the informant. This adaptability maximizes the utility of the variety of informants' responses.

Although qualitative in nature, semi-structured interviews can be used in making policy decisions. In fact, the work by Kempton, Boster, and Hartley (1995) has been used by the World Wildlife Fund to set up focus groups to address the issue of global climate change. Also, former Secretary of the Interior Hodell has used this work in policy speeches regarding the Endangered Species Act.

Potential difficulties and limitations:

There are several potential difficulties involved with this type of research. In semi-structured interviews, it is often difficult to statistically distinguish results among groups. These interviews do not produce quantitative data. Instead, they elicit qualitative data. Informants are able to answer the questions as they wish without a standard set of answers as is sometimes used in a mailed survey. Hence, answers across informants are not strictly comparable. Without gathering equivalent answers among informant groups, groups cannot be compared with statistical significance.

The reason for proposing this method, despite the above-enumerated difficulties, is that semistructured interviews are the best way to elicit previously

undocumented values and cultural models. As noted in the literature review, neither are known nor addressed in the discussion of nutrient loadings in water or regarding estuaries. Once the proposed research establishes the basic values and cultural models, subsequent surveys could be constructed in order to provide more quantitative information, if there were a need for it.

A potential extension:

One reviewer suggested an expansion of the project to include a larger sample and more quantitative methods. The reviewers acknowledged that the qualitative data, from semi-structured interviews as described above, would be valuable in itself. But one suggested that the results from those interviews could subsequently be used for a second set of structured interviews. We describe that potential extension to the proposed research here, and separate it in the budget.

After the semistructured interviews are analyzed and we have established some of the cultural models and values of residents and resource users, a survey would be conducted (if this second phase were to be done). The survey would test for the frequency of components of the above (using standard statistical analysis), and whether they are shared or differ sharply among groups (using consensus analysis). Examples of the former include Kempton and Falk (2000), and of the latter Kempton, Boster and Hartley (1995:189-212). This would be a mailed survey of a random sample of residents; if the semistructured interviews suggest differences among groups, it would also include samples of recreational boaters and/or environmental group members.

Background and Related Research

The lack of literature specific to atmospheric deposition of nitrogen has previously been addressed. However, there have been many articles describing the practicality, utility, and importance of understanding public values concerning environmental issues. These articles not only describe how values may direct public opinion, but they also describe how values can affect policy decisions.

Before we examine public environmental values, we must first define how this term is used in the literature. According to Kempton, Boster, and Hartley, values are defined as "guiding principles of what is moral, desirable, or just" (1995: 12). To Rokeach (1973), values can be considered to be "general internal standards that transcend specific situations." He continues, stating that values may "guide behavior independently of cost/benefit calculations" (Cited in Karp, 1996). The ability of values to transcend the addition of new information and changing environmental conditions is of great use to anthropologists as it provides for a firm foundation on which these new conditions can be addressed, analyzed, and interpreted (Stern *et al.*, 1995).

Values combine with beliefs to form attitudes. Attitudes are then incorporated into mental models, cultural models, and myths. Myths incorporate "general perceptions with which participants identify" and allow for the interpretation of current situations (Peterson and Horton, 1995). A mental model is characterized as "a simplified representation of the world that allows one to interpret observations, generate novel inferences, and solve problems" (Kempton, Boster, and Hartley, 1995: 10). Cultural models are models that are "shared within a culture or social group" (Kempton, Boster, and Hartley, 1995: 10).

"They are used to understand global environmental problems, they reinforce and justify environmental values, and they are the basis for reasoning that leads to preferences for some environmental policies over others" (Kempton, Boster, and Hartley, 1995: 39). For more general background on cultural models, including diverse examples outside the environmental field, see Holland and Quinn (1987).

Individuals may share similar attitudes towards environmental issues for vastly differing reasons (Schultz, 2000). In many cases, various cultural models may be used to address one particular environmental concern. Different user groups often use different models. Therefore, it is important to not only identify and understand the values of your target audience, but to identify which individual model these user groups are using to analyze specific environmental issues. Kempton, Boster, and Hartley caution that inappropriate cultural models used by the general public may lead to misdirected concern and ineffective policy decisions (1995: 66,77,85); this corresponds to earlier findings that inappropriate mental models can interfere with classroom learning (McCloskey, 1983).

Kempton, Boster, and Hartley have documented the use of inappropriate cultural models applied to environmental issues. A clear example of this practice is demonstrated in the misuse of the pollution model to address the problem of green house gases. Their pollution model consists of four key elements:

1. Pollution consists of artificial chemicals
2. These chemicals are toxic to humans and may not produce adverse effects until a later time
3. The main sources of these chemicals are predominately industrial and automotive
4. Pollution can be reduced by using filtering equipment

(Kempton, Boster, and Hartley, 1995: 64-65).

What Kempton, Boster, and Hartley found was that a large majority of the American public considered greenhouse gases to be pollution, and thus applied the above elements of the pollution cultural model to this problem. However, the primary gases contributing to the greenhouse effect, CO_2 and CFCs, are nontoxic. Similarly, greenhouse gases are not particulates, so they cannot be filtered using any existing technology. In fact, these filtering mechanisms suggested by the public actually reduce power plant efficiency causing more CO_2 to be released exacerbating the problem (Kempton, Boster, and Hartley, 1995: 65).

In order for policies to accurately address the priorities of the public, decision-makers must first understand cultural models being used to interpret current environmental conditions. Kempton and Falk relate, "Cultural models become problematic when old models are applied to new phenomena they do not match" (2000). Thus, inappropriate cultural models applied to environmental issues lead to policy misconceptions and improper public concern. For a complete description of how old models are currently being applied to new environmental conditions, refer to Kempton and Falk's discussion of *Pfiesteria* (2000).

Laypeople, or the general public, incorporate new environmental information into their existing cultural models and rely on these models to interpret environmental policy initiatives (Kempton, Boster, and Hartley: 123, 126, 2). Values used in conjunction with cultural models determine what is important to a user group and, in turn, direct policy preference (Kempton, Boster, and Hartley, 1995: 159). Non-environmental values and beliefs can also be incorporated into understanding how user groups perceive environmental

problems. Paolisso points out, "We cannot, for example, understand commercial watermen's [commercial fishermen's] responses to pending blue crab fishery regulations without understanding the cultural model of nature, which includes religious and spiritual beliefs and values about nature" (personal communication). The watermen value faith and trust in God; this influences how they look at nature. Similar spiritual connotations are noted in Kempton, Boster, and Hartley as religious values towards nature (1995).

Anthropological interviewing can reveal environmental and non-environmental values used by the general public. Paolisso states, "A key role for anthropology is to investigate how stakeholder groups use different or complementary sets of cultural beliefs and values to construct models of environment and pollution" (1999). In their work, Paolisso and Maloney utilize semi-structured interviews, among other techniques, to gather values, beliefs, and cultural models used by Maryland farmers regarding *Pfiesteria* (2000). This methodology can reveal and harness the power of the public concern (Lofstedt, 1995). The power of public concern can support or oppose particular environmental policies.

Decision-makers and regulatory agencies often use the power of public concern to support environmental protection measures. However, public concern over an issue is not the only factor that affects public policy support. As addressed in Bunting-Howarth (2001), cultural models of the government and science can affect policy preferences. These cultural models of and attitudes towards government and science in defining environmental problems and associated solutions may be altered during public collaborative decision-making

processes (Bunting-Howarth, 2001). Thus, public participation processes can foster shared cultural models, definitions of environmental problems and policy preferences (Bunting-Howarth, 2001). By knowing values and cultural models the general public uses to address environmental problems and policies, not only can agencies and governmental bodies gain an understanding of what is important to the population, but they can use this information to construct environmental policies the general public will accept, ratify, and be willing to work together to achieve environmental goals.

Public participation is essential to insure that the environmental objectives of the people coincide with those of the decision-makers and represent the "fundamental values of society" (Harwell, 1999; CBEP, 2001). Public participation is the means by which "public concerns, needs, and values are incorporated into governmental decision-making…with the overall goal of better decisions supported by the public" (Maloff, 2000).

Rapport *et al.* relate "the identification of community values necessarily entails a participatory process in which all community interests are represented" (1998). Through this process, user groups identify aspects of the natural resource they find most important. In this manner, values are derived from the community. Working together, user groups, the general public, and local government officials were able to assemble together similar values and incorporate them into unifying objectives for the Kissimmee River Basin to combat and correct what they felt were inappropriate development practices.

Similarly, Toth and Aumen (1994) stress the need for acknowledging social, cultural, and economic issues and concerns into the planning process.

They also encourage maintaining good communication throughout all user groups, the general public, and government officials involved in the policy development process (cited in Rapport *et al.*, 1998). Keeping alive communication and cooperation between groups is essential in the policy process. It is important to understanding the positions held by the various user groups involved with any public policy program such as the TBNEP. Understanding the reasoning behind policy preference, including evaluating the needs and interests of various user groups affected by policy decisions could, as Smith and Jepson (1993) state, "enhance the probability of cooperation."

To Peterson and Horton (1995), "it seems appropriate for the public to participate in policy decisions regarding the environment within which they live." Public participation in the process of implementing environmental policy takes on many forms: surveys, focus groups, public opinion polls, and educational programs to name just a few. Public outreach and educational programs have been used by many environmental agencies and organizations to better inform the general public on current environmental issues. However, not all have proven successful. Loftstedt illustrates this point with an outreach program implemented in the United Kingdom (1995). The UK Department of the Environment (DoE) produced an expensive media campaign regarding global warming. However, Loftstedt states that the DoE failed to address the fact that the general public often confused global warming with ozone depletion (1995). This is remarkably similar to confusion found by Kempton, Boster, and Hartley in their study in the United States (1995). Subsequently, the program failed to increase environmental awareness and was a waste of time and money. This example further illustrates

the importance of understanding the degree of environmental awareness possessed by the general public as well as understanding the cultural models and underlying values used by the public to address environmental issues.

Understanding how the general public perceives the environment and the measures put into place to safeguard natural resources is just the beginning. Continued interaction with the general public is needed throughout the length of the program. "A well-crafted outreach program that enlists and involves diverse interests as partners in bay restoration and protection is a hallmark of all successful National Estuary Programs" (TBNEP, 1996: p. 245). Public outreach could include periodically assessing the priorities of citizens regarding environmental protection. In this manner, priorities are constantly updated to assure more efficient resource protection with the greatest amount of public support. By involving the general public in all levels of environmental protection, a sense of community pride develops and environmental awareness is subsequently enhanced.

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Semi-Structured Interview Budget

A. SALARIES & WAGES				AGENCY	GRANTEE
1. Senior Personnel				Year 01	
a. Prin. Investigators				$6,176	$0
b. Associates				$0	$0
Subtotal				$6,176	$0
2. Other Personnel					
a. Professionals				$0	$0
b. Graduate Students				$24,000	$0
c. Secretarial/Technical				$0	$0
Total Salaries & Wages				$30,176	$0
B. FRINGE BENEFITS				$1698	$0
TOTAL SALARIES, WAGES, & BENEFITS				$31,847	$0
C. PERMANENT EQUIPMENT				$0	$0
D. EXPENDABLE SUPPLIES & EQUIPMENT				$1,000	$0
E. TRAVEL					
1. Domestic				$7,600	$0
2. International				$0	$0
Total Travel				$7,600	$0
F. PUBLICATION & DOCUMENTATION				$0	$0
OTHER COSTS					
1. Ship Charges				$0	$0
2. Tuition				$0	$27,608
TOTAL DIRECT COSTS (A through F)				$40,474	$27,608
INDIRECT COSTS					
Year 01: Agency	51.0%	of	$40,474	$20,642	
Grantee: Unit	51.0%	of	$0		$0
State	51.0%	of	$0		$0
Other	51.0%	of	$0		$0
TOTAL INDIRECT COSTS				$20,642	$0
TOTAL COSTS				$61,116	$27,608

Additional Quantitative Interviews and Analysis

A. SALARIES & WAGES	AGENCY	GRANTEE
1. Senior Personnel	Year 02	
a. Prin. Investigators	$6,407	$0
b. Associates	$0	$0
Subtotal	$6,407	$0
2. Other Personnel		
a. Professionals	$0	$0
b. Graduate Students	$12,475	$0
c. Secretarial/Technical	$0	$0
Total Salaries & Wages	$18,882	$0
B. FRINGE BENEFITS	$1,762	$0
TOTAL SALARIES, WAGES, & BENEFITS	$20,664	$0
C. PERMANENT EQUIPMENT	$0	$0
D. EXPENDABLE SUPPLIES & EQUIPMENT	$0	$0
E. TRAVEL		
1. Domestic	$0	$0
2. International	$0	$0
Total Travel	$0	$0
F. PUBLICATION & DOCUMENTATION	$0	$0
G. OTHER COSTS (ICR Applied)		
1. Computer Costs	$0	$0
2. Consultants	$13,500	$0
Subtotal	$13,500	$0
OTHER COSTS		
1. Ship Charges	$0	$0
2. Tuition	$0	$14,370
TOTAL DIRECT COSTS (A through F)	$34,144	$14,370
INDIRECT COSTS		
Year 01: Agency 51.0% of $34,144	$17,413	
Grantee: Unit 51.0% of $0		$0
State 51.0% of $0		$0
Other 51.0% of $0		$0
TOTAL INDIRECT COSTS	$17,413	$0
TOTAL COSTS	$51,557	$14,370

Review of Proposal by James Falk

From cover email:

Willett: See attached for a few comments on your proposal. Overall, I thought it was clearly written and could provide some very interesting and useful information for the Tampa Bay Estuary Program. Jim

Attached specific comments:

Overall, I thought the proposal was well-written and it clearly describes an approach to determining values of Tampa Bay residents. The comments discussed below focus more on your methodology than any other aspect of the proposal.

1. One of the statements that you make is that there is a lack of public input on atmospheric deposition of nitrogen to the Tampa Bay system. I assumed that this implies you were going to concentrate on obtaining this information during your interviews, however only question 10 in the structured interview list of questions focused on this aspect of air-borne substances.

2. Is there a need to acquire demographic information of any kind during interviewing?

3. When you mention "the general public", isn't it more a "select sample of the general public". I don't think you expect your targeted groups for interviews to represent <u>all</u> the general public of the Tampa Bay area.

4. Can you indicate how many interviews you expect to get from each of the 3 target groups? I think that this is especially important since you don't want to over-represent the views of NGO's since they usually (as you noted from pilot test) provide a great deal of information that may not represent view of the average Tampa Bay resident.

5. Are there other user groups that use the bay (for recreation or commercial uses) that might be important to target for interviews other than recreational boaters?

6. When you talk about interviewing boaters at boat ramps, 20 minutes is a long time to hold up a boater who is pulling his boat out of the water. Take it from someone who has talked to boaters and had a number of students talk to them over the years. It is difficult to keep them for that long of time, especially considering the format of your questions. I have found they like short, simple questions to answer, not one's that require a great deal of thought. If you indeed want boater input, I would suggest you re-think where the boater interviews would take place.

7. I thought question #13 was poorly-worded. Maybe something like:

   Do you, yourself, use the Tampa Bay for any forms of recreation or other enjoyments? or

   Do you, yourself, participate in any recreational activities on the Tampa Bay, or use it for any other forms of enjoyment?

8. I thought you did a good job discussing your difficulties and limitations, and I am wondering since you can't distinguish statistical differences among different groups surveyed is it necessary to identify the 3 distinct groups you plan to target for interviews?

9. I think you make a very valid point that this proposed research may be a first step to identify basic values and cultural models and that more quantitative research may be a second step necessary to fully understand the attitudes and opinions of select interest groups. Do you plan to review some of the earlier survey results (I think you mentioned the estuary program had conducted earlier public opinion surveys) to help frame some of your interview questions?

10. Are there any success stories you can share as examples of how information acquired from semi-structured interviews have been useful in policy decision-making?

Response to Falk review:

Five comments were accepted as stated and addressed through changes in the text of the proposal: 4, 5, 6, 9, and 10. Those requiring responses are below.

Comment #1: We are not studying public input. Our study proposes to examine publicly held values, attitudes, and cultural models to *enhance* public input.

Comment #2: No, there is no need to acquire demographic information as we do not have a use for that information in this study.

Comment #3: If responses from specific target groups (general public, boaters, NGOs) within the text could be inferred to represent the views of the "general public" at large, clarification of labeling was used to correct any possible misinterpretations.

Comment #7: We selected the second suggestion for changing the wording of the question: "Do you, yourself, participate in any recreational activities on the Tampa Bay, or use it for any other forms of enjoyment?"

Comment #8: We will demonstrate differences observed among groups if it seems sensible in the context of the discussion. However, we will qualify that by stating that the differences observed may not be statistically significant.

Comment #9: We did consider earlier survey results described in the Tampa Bay Public Opinion Poll. However, we conclude that this source will not change the questions used in our interviews. We did reexamine the implications of certain questions used in the opinion poll. We address these implications in the text.

Review of Proposal by Michael Paolisso:

April 23, 2001

From: Michael Paolisso
Department of Anthropology
University of Maryland

Dear Douglas and Willett:

I've reviewed your proposal with great interest, since the topic of cultural models and environmental values is central to my own work on the Chesapeake Bay. I think you have the makings of a fine research project. I would like to make only the following few comments or observations, which you may find useful as you finalize the proposal.

1. For the non-anthropological audience, I think slightly more description of cultural models by way of examples would be useful. Citing the Kempton et al. 1995 is certainly our most developed work to date. However, we now have other examples, such as Willett and Falk's cultura models or Pfiesteria, our own work on cultural models of Pfiesteria, environmental and pollution (the most recent issue of Human Organization has our summary of some of this other cultural model work. What about Bunting-Howarth's use of cultural models in her dissertation. I would also include a little of the Holland and Quinn, Bradd Shore, D'Andrade citations, etc. I think the reader/reviewer/non-anthropologist would benefit from knowing that cultural models are being used by various researchers for various topics. The point being to substantiate their research and policy usefulness.

2. In reading your proposal, I was struck by the good but brief discussion of the link between environmental values and cultural models, a topic we are currently grappling with as well. While the proposal does a good job of describing environmental values, there is less description, even hypothetical, where these environmental values fit within our cultural models. Implicit in this statement is our own orientation that cultural models include non-environmental beliefs and values. We cannot, for example, understand commercial watermen's responses to pending blue crab fishery regulations without understanding the cultural model of nature, which includes religious and spiritual beliefs and values about Nature. Watermen value faith and trust in each other and God, and that influences how they look at nature and the part of nature that is environment (which may be that part that is affected by human actions). So, when we seek to model their views on regulating blue crabs, we need

to go well beyond environment in our cultural models and include a range of values. Environmental values are a part of our cultural models. How they articulate with environmental knowledge and attitudes in these models is, I think, a critical area that you could explore with your Tampa Bay research.

3. As Willett has heard me say before, while I strongly agree and support the semi-structured emphasis of your research, it seems that without some quantitative analysis, an opportunity is lost. This quantitative could be very qualitative in nature. Why not do some free listing and pile sorting, for example, or a few agreement questions similar to those used in Kempton et al. 1995? This need not take much time. It would give you some numbers for comparison across groups, let you present some results graphically (multidimensional scaling), and allow you to test for consensus. Maybe your respondents would be willing to fill out a mailed questionnaire after your interview? Wouldn't take much time, and you have already established rapport, and probably improved the likelihood of getting a response. Ten to 15 agreement statements based on your analysis of the semi-structured data would be very informative.

4. I was not clear on your sample size per group, and whether you will be using the pilot questionnaire again, or some other instrument for the semi-structured.

5. What about the political ecology factors? We are finding the need to contextualize our cultural model research within a broader (and quite amorphous) political ecology framework. In addition to differences in cultural models, there are differences in political and economic interests. In our recent Human Organization article we touch a few political ecology concerns to our cultural model research.

   Again, I think you have the makings of some important research, and your proposal has much of what you need to successfully undertake your work. Good luck, and keep me informed of your progress.

Michael

Response to Paolisso review:

Three comments were addressed throughout the text of the proposal: 1, 2, and 3. Responses to others are below.

Comment #4: The sample size per group was addressed in Dr. Falk's comments and subsequently changed in the Research Design and Methods section of the

text. We believe that this instrument worked well for the pilot study. Our intentions are to only modify this instrument as recommended by the reviewers including Dr. Falk's Comment #7.

Comment #5: We will include descriptions of cultural models concerning political and economic interests if provided by respondents. Otherwise, we will not include an analysis of political ecology factors.